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PILLSBURY WINTHROP, LLP			KOVAL, MELISSA J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/629,916	Applicant(s) SUZUKI ET AL.	
	Examiner Melissa J Koval	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 7,8,16 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/30/03 & 1/28/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to because Figure 2B does not show elements 41 through 45 as set forth on page 9, lines 14 through 19, of applicant's specification. Figures 3A and 3B do not show with reference numerals the polarizing plates and liquid crystal light bulbs discussed throughout page 10 and on top of page 11 through line 20 of the specification. The same is true for Figures 4 and 5, i.e. any liquid crystal light bulbs or polarizing plates shown therein are not assigned reference numerals. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: On page 9, lines 14 through 19, of applicant's specification, elements 41 through 45 as described with respect to Figure 2B are not shown. Furthermore elements, 50 through 54, shown in Figure 2B are not discussed in that same section of the specification. In the specification, throughout page 10, and on top of page 11 through line 20, polarizing plates and liquid crystal light bulbs are discussed with respect to Figures 3A and 3B, but these elements are not shown in the Figures, i.e. reference numerals 21, 22, 23, 26, 27, 34, 35, and 36. Figures 4 and 5 suffer from a similar problem in that polarizing plates and liquid crystal light bulbs are discussed but not shown.

Appropriate correction is required.

Claim Objections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are objected to under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In view of Applicant's Figure 3A, for example, the examiner objects to the following limitations as set forth in claim 1: "an air chamber which is formed downstream of the air discharge section in the air duct and configured to blow cooling air from the air discharge section toward the display section". The language suggests that the air chamber itself is configured to blow cooling air. Element 53 is defined as the chamber for Figure 3A. There is no structure shown there for blowing air, the chamber is simply an enclosed space. Perhaps the applicant is suggesting that the chamber is configured to direct or guide cooling air, but this is not clear from the plain language of the claim.

Claims 6 and 13 are objected to for the same reasons already applied to objected to claim 1.

Claims 2 and 9 are objected to for the use of the phrase "light bulb". Applicant is not teaching a device making use of a light bulb in the most conventional sense. Applicant's display section is a light modulator rather than a source of illumination and no more. It is recommended that the terminology of the claim be changed to better reflect the elements comprising applicant's device as shown in the figures.

Claims 3 and 10 are objected to for the same reasons. Applicant may want to replace the terminology "liquid crystal light bulb" with - - liquid crystal panel - - or - - liquid crystal display - -.

Claims 4, 5 and 12 are objected to because they depend from already objected to claim 1.

Claims 7, 8 and 11 are objected to as they depend from already objected to claim 6.

Claims 14 through 17 are objected to as they depend from already objected to claim 13.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 6, 11, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. ('703 B1).

Refer to Figures 5, 6 and 8 of '703 B1, for example.

Claim 1 sets forth: "A projection display device (projection display 4) comprising:

a light source (light source 42);

display section configured to receive light from the light source and output image light modulated with an image signal (See color recombination unit 44. Refer to column 3, lines 30 through 50, wherein light modulators 431, 432, and 433, comprising color recombination unit 44, for example, are discussed.);

a projection device configured to project the image light output from the display section (projection lens 45);

a duct device having an air duct for conducting air from an air intake (first air inlet 461) to an air discharge section (first air outlet 462) and an air chamber which is formed downstream of the discharge section (See first air passage 463. Also refer to column 3, lines 54 through 59, wherein Wang et al. ('703 B1) teaches: "A first air passage 463 extends from between the first air inlet 461 and the right side of the projection lens 45 to a location rearwardly of the first light modulator 431 so as to fluidly communicate the first air inlet 461 and a vicinity of the first light modulator 431". Thus the examiner interprets the first air passage 463 to meet the limitations of applicant's claimed downstream air chamber.) in the air duct and configured to blow cooling air from the air discharge section toward the display section; and

an air blower configured to blow cooling air into the air intake (first blower unit 46)."

Claim 5 sets forth: "A projection display device according to claim 1, wherein the air discharge section of the duct device has an input-side air outlet for discharging air toward the input side of the display section and an output-side air outlet for discharging air toward the output side of the display section." Refer to Figure 8 of ('703 B1) where

Art Unit: 2851

the limitations of claim 5 are clearly shown from in the Figure. Also refer to column 4, lines 1 through 9, and in particular, starting in line 5, the following: "air that is released at the first air outlet 462 can be guided to the vicinity of the third light modulator 433 via the first air guide member 464 and disperse downwardly for cooling the third light modulator 433 and other nearby optical components, as best shown in FIG. 8".

Claim 6 sets forth: "A projection display device (projection display 4) comprising:

a light source (light source 42);

a separation section configured to separate light from the light source into a plurality of primary colors of light (Refer to column 3, lines 34 through 41, wherein the following is set forth: "White light radiated by the light source 42 is processed by a number of optical elements, such as filters, integrators, polarized beam splitting prisms, beam splitters, mirrors, etc., so as to separate the same into first, second and third color components, e.g. red, blue, and green color components, that are directed respectively to first, second and third light modulators 431, 432, 433 for light modulation.").";

a plurality of image display sections each of which is configured to receive a respective one of the primary colors of light and output image light modulated with an image signal corresponding to the respective one of the primary colors of light (See first, second and third light modulators 431, 432, 433 for light modulation.);

a projection device configured combine and project the image light from the display sections (projection lens 45);

a duct device having an air intake (first air inlet 461), a plurality of air discharge sections (first air outlet 462 and second air outlet 472), and a plurality of air ducts for

Art Unit: 2851

conducting air from the air intake to the air discharge sections (Refer again to the rejection of claim 1 with respect to the duct device set forth therein. Furthermore refer to the following set forth in column 4, lines 9 through 32.), at least one of the air ducts having an air chamber formed downstream of the corresponding air discharge section, and configured blow cooling air from the air discharge sections toward the display sections (Keeping in mind the remarks set forth in the rejection of claim 1, the examiner interprets the first air passage 463 to meet the limitations of applicant's claimed downstream air chamber.);

an air blower configured to blow cooling air into the air intake (either first air blower unit 46 or second air blower unit 47)."

Claim 11 sets forth: "A projection display device according to claim 6, wherein a plurality of air intakes are provided and the air blower is placed at each of the air intakes." Refer to second blower unit 47 second air inlet 471.

Claim 13 is met for the same reasons already applied to already rejected claims 1 and 6 above.

The limitations of claim 15 are met for reasons already given in the rejection of claim 6 above.

Claims 1, 2, 3, 5, 6, 9, 10, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohishi et al. ('267 B2).

Refer to Figures 7 and 8 of Ohishi et al. ('267 B2), for example.

Claim 1 sets forth: "A projection display device (liquid crystal projector 1) comprising:

a light source (light source section 11a);

display section configured to receive light from the light source and output image light modulated with an image signal (See image synthesis section 11b. The optical unit is described with reference to Figure 8. Refer to column 9, lines 50 through 65.);

a projection device configured to project the image light output from the display section (projection lens 12);

a duct device having an air duct (intake duct 38) for conducting air from an air intake (intake port 36) to an air discharge section (three bottom openings 49c) and an air chamber which is formed downstream of the discharge section in the air duct and configured to blow cooling air from the air discharge section toward the display section (See three in-feed ports 39 and the space in the duct 38 downstream from the fan 37 and just below ports 39 as shown in Figure 7 of '267 B2. Note that as shown in Figure 7, air is discharged from the air intake duct 38 through three bottom openings 49c toward liquid crystal panels 51R, 51G and 51B. Also refer to column 10, lines 45 through 64.); and

an air blower configured to blow cooling air into the air intake (intake fan 37)."

Claim 2 sets forth: "A projection display device according to claim 1, wherein the display section is a light bulb (See liquid crystal panels 51R, 51G, 51B)". It is known to the examiner that a "liquid crystal panel" and a "liquid crystal light bulb" are synonyms for one another in the art.

Claim 3 sets forth: "A projection display device according to claim 1, wherein the display section comprises a liquid crystal light bulb and polarizing plates placed on

Art Unit: 2851

input and output sides, respectively, the liquid crystal light bulb". Refer to column 9, lines 60 through 65, of Ohishi et al. wherein the following is set forth: "Each of the liquid crystal panels 51R, 51G and 51B has an incoming side polarizing plate 52a and an outgoing side polarizing plate 52b disposed on an incoming face and an outgoing face thereof and acts as a light valve which modulates incoming light based on a signal applied thereto and sending out the modulated light."

Claim 5 sets forth: "A projection display device according to claim 1, wherein the air discharge section of the duct device has an input-side air outlet for discharging air toward the input side of the display section and an output-side air outlet for discharging air toward the output side of the display section." Refer to Figure 7 of ('267 B2) wherein the limitations of claim 5 are clearly met as shown in the Figure. Particularly refer to openings 49c and 49d as well as the arrows that describe airflow through the vertical air-cooling gaps 60 formed on the opposing sides of liquid crystal panels 51R, 51G, 51B.

Claim 6 sets forth: "A projection display device (liquid crystal projector 1) comprising:

- a light source (light source section 11a);

- a separation section configured to separate light from the light source into a plurality of primary colors of light (Refer to column 9, lines 66 and 67, and column 10, lines 1 through 44. See dichroic mirrors 57a and 57b.);

- a plurality of image display sections each of which is configured to receive a respective one of the primary colors of light and output image light modulated with an

image signal corresponding to the respective one of the primary colors of light (See image synthesis section 11b. The optical unit is described with reference to Figure 8. Refer to column 9, lines 50 through 65.);

a projection device configured combine and project the image light from the display sections (projection lens 12);

a duct device (intake duct 38) having an air intake (intake port 36), a plurality of air discharge sections (three bottom openings 49c), and a plurality of air ducts for conducting air from the air intake to the air discharge sections (Note that air duct 28 extends into ports 39 that are shaped as ducts before opening to cooperate with openings 49c as shown in Figure 7 of '267.), at least one of the air ducts having an air chamber formed downstream of the corresponding air discharge section, and configured blow cooling air from the air discharge sections toward the display sections (See three in-feed ports 39 and the space in the duct 38 downstream from the fan 37 and just below ports 39 as shown in Figure 7 of '267 B2.);

and an air blower configured to blow cooling air into the air intake (intake fan 37)."

Claim 9 sets forth: "A projection display device according to claim 6, wherein each of the display sections is a light bulb (See liquid crystal panels 51R, 51G, 51B)". Also refer to the remarks set forth with respect to claim 2.

Claim 10 sets forth: "A projection display device according to claim 6, wherein the display sections comprise red, green and blue liquid crystal light bulbs and

Art Unit: 2851

polarizing plates placed on input and output sides of the respective liquid crystal light bulb". Refer to column 9, lines 60 through 65, wherein the following is set forth: "Each of the liquid crystal panels 51R, 51G and 51B has an incoming side polarizing plate 52a and an outgoing side polarizing plate 52b disposed on an incoming face and an outgoing face thereof and acts as a light valve which modulates incoming light based on a signal applied thereto and sending out the modulated light."

Claim 13 is met for the same reasons already applied to already rejected claims 1 and 6 above.

The limitations of claim 15 are met for reasons already given in the rejection of claim 6 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. ('703B1) in view of Fujishiro ('349 B2).

Wang et al. ('703 B1) teach all of the elements of claim 2, however Wang et al. refer to their elements 431, 432, and 433 as light modulators in general. Wang et al. do teach that their invention is an improvement over liquid crystal projectors of the prior art. Therefore, the examiner interprets that that the modulators of Wang et al. could be

liquid crystal panels. The figures of '703 B1 depict the modulators 431, 432 and 433 as having a panel shape. Furthermore, Wang et al. make it very clear in column 3, lines 34 through 41, that the projection display disclosed may comprise a variety of optical elements as described therein.

Refer to Figure 6 of Fujishiro ('349 B2), for example. A three color system making use of panel shaped polarizers with liquid crystal light bulbs for light modulation in a projection system is shown therein. Although Fujishiro does not show a cooling system with ducts and blower means, the effects of temperature on the components comprising the projector is a concern of the invention. Also refer to column 1, lines 56 through 65. Fujishiro teaches a liquid crystal light bulb 4, for example, that overcomes several problems existing in the prior art. One problem is degradation in display quality due to scattered light, see column 2, lines 17 through 23 of '349 B2. Another is image degradation occurring when components are exposed to a high temperature. See column 2, lines 48 through 58.

Claim 2 sets forth: "A projection display device according to claim 1, wherein the display section is a light bulb".

Claim 3 sets forth: "A projection display device according to claim 1, wherein the display section comprises a liquid crystal light bulb and polarizing plates placed on input and output sides, respectively, the liquid crystal light bulb".

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the liquid crystal light bulbs of Fujishiro for the modulators of Wang et al. to meet the limitations of both of applicant's claims 2 and

Art Unit: 2851

3. The motivation for one having ordinary skill in the art to make the substitution would be to achieve a projection system having improved image quality due to the reduction of image degradation due to scattered light and also due to a higher performance of components with regard to the effects of temperatures within the projector.

Claims 9 and 10 are rejected for the same reasons applied to already rejected claims 2 and 3, respectively.

Claims 4, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. ('703 B1) or Ohishi et al. ('267 B2) in view of Shirahishi et al. ('686 B1).

Wang et al. ('703 B1) teach all of the limitations of claims 4, 12 and 14, however, Wang et al. do not specifically state that their first and second blower units 46 and 47, respectively, are centrifugal fans. Wang et al. teach that their projection display is improved over the prior art in terms of achieving proper heat dissipation to achieve high brightness. See column 2, lines 7 through 9. Wang et al. also teach that heat dissipation should be achieved to prevent breakdown of the projection display as well as avoiding image degradation. See column 1, lines 31 through 34.

Ohishi et al. ('267 B2) teach all of the limitations of claims 4, 12 and 14, however, Ohishi et al. do not specifically state that their intake fan 37, for example, is a centrifugal fan. It is an object of the invention of Ohishi et al. to increase the life of the electronic parts comprising the projector and to prevent deterioration of the projector's performance. See column 2, lines 1 through 6 of Ohishi et al. Also refer to column 3, lines 35 through 41, for example.

Shirahishi et al. ('686 B1) teach that centrifugal fans, centrifugal cooling means 130 as shown in Figure 8, are known for cooling light modulating components comprised by liquid crystal projectors making use of a duct system for cooling said components. Refer to column 1, lines 10 through 37, for example. Also refer to column 8, lines 54 through 67, and column 9, lines 1 through 5.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a centrifugal fan for either the blower units of Wang et al. or the intake fan of Ohishi et al. thus meeting the limitations of claims 4, 12 and 14. The motivation for one having ordinary skill in the art to make such a substitution would be to achieve a projection system having high luminance with efficient heat dissipation for achieve a bright, high quality image and a projection system comprised by components having a long operating life.

Allowable Subject Matter

Claims 7, 8, 16 and 17 would be allowable if rewritten to overcome the objection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Further clarification of the orientation and structure of the air chamber with respect to the remainder of the device, as set forth in the dependent claims,

Art Unit: 2851

distinguishes the claimed device over the prior art of record. The prior art of record neither shows nor suggests the following as set forth in applicant's claim 7: "the air chamber is formed downstream of the air discharge section provided in parallel with the corresponding air duct". Nor does the prior art of record show or suggest the following as set forth in applicant's claim 8: "the air chamber is formed downstream of the air discharge section which is the furthest from the air intake".

Claims 16 and 17 would be allowable for the same reasons, respectively.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koyama et al. U.S. Patent 6,736,513 B2 teaches a projection type image display apparatus.

Li et al. U.S. Patent 6,497,489 B1 teaches a projector with guiding rib in vent.

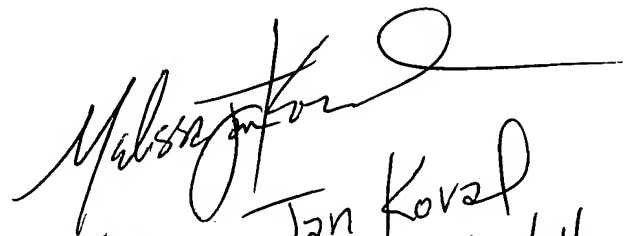
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571)272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJK


Melissa Jan Koval
5/25/04